Rocks and Minerals

A Magazine for Mineralogists, Geologists and Collectors

Official Journal of the Rocks and Minerals Association

March, 1942

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THE ROCKS AND MINERALS ASSOCIATION

(Members All Over the World)

Organized in 1928 for the increase and dissemination of mineralogic knowledge

To stimulate public interest in geology and mineralogy and to endeavor to have courses in these subjects introduced in the curricula of the public school systems; to revive a general interest in minerals and mineral collecting; to instruct beginners as to how a collection can be made and cared for; to keep an accurate and permanent record of all mineral localities and minerals found there and to print same for distribution; to encourage the search for new minerals that have not yet been discovered; and to endeavor to secure the practical conservation of mineral localities and unusual rock formations.

Ever since its foundation in 1928, the Rocks and Minerals Association has done much to promote the interest in mineralogy. It has sponsored outings, expeditions, formations of mineralogical clubs and the printing of many articles that have been a distinct contribution to mineralogy.

Those of our readers who are members of the Association can rightly feel that they too were sponsors of these many achievements that have helped to give mineralogy a national recognition. Among your friends there must be many who would like to have a part in the Association's work—to share with you the personal satisfaction, the pleasure, and the benefits of membership. Will you give your friends this opportunity to join the Association by nominating them for membership?

Each new member helps to extend the Association's activities—helps to make your magazine larger, better, and more interesting, and above all assists in the dissemination of mineralogical knowledge.

Some advantages of membership: All members in good standing receive:

(1) **Rocks and Minerals**, a monthly magazine. (2) A member's identification card that secures the privileges of many mines, quarries, clubs, societies, museums, libraries. (3) The right to participate in outings and meetings arranged by the Association. (4) the right to display a certificate of membership and to place after their names a designation indicating their membership or to advertise membership on stationery, etc. (5) The distinction and the endorsement which comes from membership in the world's largest mineralogical society.

Mineralogical clubs which subscribe for **Rocks and Minerals** also become affiliated members of the Rocks and Minerals Association and enjoy all the advantages which such an affiliation affords.

A number of clubs hold membership in the Association, participate in the annual outings, and co-operate in many ways in furthering the aims and ambitions of the Association.

Affiliation with the world's largest mineralogical society cannot fail to increase membership, enlarge circles of acquaintanceship, and stimulate a keener interest in mineralogy.

A list of affiliated clubs will be found among the back pages of the magazine.

ROCKS and MINERALS

PUBLISHED MONTHLY

Edited and Published by PETER ZODAC

March 1942

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ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The Official Journal of the Rocks and Minerals Association

Chips From The Quarry

Mr. Albanese Suggests a Plan

A very interesting letter was recently received from John Albanese, the popular mineral dealer of Newark, N. J. Among other things Mr. Albanese calls attention to the mineral show that will be held again this year by the New Jersey Mineralogical Society of Plainfield, N. J. He believes it would be a good idea to pass out sample copies of *Rocks and Minerals* to the thousands of visitors who will be in attendance at the show.

We, too, believe that this would be a mightly fine way to acquaint the public with *Rocks and Minerals* but it would be a costly one as very few subscriptions are apt to be received. From past experiences we have learned to our sorrow that the wanton distribution of the magazine was always a total loss. People will accept anything that is given away gratis and out of every thousand copies thus given less than three would result in subscriptions.

We, therefore, hesitate to issue an additional number of copies of the magazine to pass out at the show. The printing cost is now 15% higher than it was six months ago while the cost of many supplies has greatly increased in price, too. Although everything has gone up, we have not increased the subscription rate of *Rocks and Minerals* nor do we intend to do so unless forced to by additional higher costs.

Mr. Albanese, who is one of our most enthusiastic subscribers, is well aware that prices have gone up on a large number of items. He realizes, however, that the furthering of mineralogy is as much the duty of collectors and mineral clubs as it is of *Rocks and Minerals*. "Why not," he argues, "give collectors the opportunity to cooperate with *Rocks and Minerals* in a drive to disseminate information on mineralogy among the general public? Many collectors would be glad to do so. I suggest that you open a fund for contributions to this end and issue extra copies of the magazine for the show to the amount contributed. If you are in favor of the fund, put me down as a contributor."

We accept Mr. Albanese' suggestion and the fund is now open for contributions. We have deposited $10 and whatever amount is received by the time the show opens (later in the year) magazines to the amount of money received will be printed and given away free of charge. Ten dollars will pay for 100 copies; one hundred dollars will pay for 1500 copies.

Peter Zodac

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Whole No. 128

LOOK AROUND BEFORE YOU LEAVE!

By HORACE W. SLOCUM

Why? Because time and again this habit of, "Taking a look around," has paid the writer good dividends in mineral specimens, which, had not his nosiness got the better of his impatience would have resulted in his leaving the locality with the idea that nothing was to be collected there. But a half hour spent in poking around the immediate vicinity of a mine dump or quarry which apparently was barren from a collector's point of view, has often produced results which were satisfying if not actually amazing.

The whole procedure can better be illustrated by a few examples.

For instance, one fine Spring morning a trip was made to an old chromite mine known as Low's Line Pit. Dana[1] locates it as Texas, Penn. That must be a very old name and is, to a collector who is unfamiliar with the locality, a misleading one. The nearest habitations are at a cross road about 3/4 of a mile southeast of the Pit. The cross roads are known as Rock Springs Run, Md. We found the pits and dumps without much difficulty. But after a half hour's search thru the various dumps without finding anything interesting, or at least not interesting enough to take home, v decided that the 60 mile drive had been in vain. Right then was where the writer's inquisitiveness took charge and we took a walk in ever broadening circles about the old workings. Call it luck if you want to, but about 200 yards to the northeast of the mine shaft, on a low grassy knoll the writer stubbed his toe, and on looking down at the stone over which he had tripped, found that he had unearthed a good specimen of bright green Williamsite. There had been none in the dumps. We could swear to that as it has been the chief object of our search. Low's Line Pit had been noted for the fine Williamsite that had come from there so we were watching for it. Further work with the pick hammers proved that the grass covered hillock had at one time been a dump, though why it was so far away from the other dumps we could never be sure, but from that grassy plot over 50 pounds of good Williamsite were taken. A lot of it good enough to cut generous sized translucent green cabochons if you could overlook the tiny black octahedrons of Chromite which are scattered through the matrix.

So you may say it was Luck. Well it certainly was lucky that the writer stubbed his toe, but it was by no means luck which caused him to be poking around 200 yards from the nearest dump.

How the Ashmore Farm locality was rediscovered

Nor was it Luck that once more located that classic of Dana's,[2] the Ashmore Farm in Natural Bridge, N. Y. Not that we were hunting the Ashmore Farm, for we had never at that time heard of it. We were following, with not too great

1 Dana's *System of Mineralogy*. 6th *Ed.*, John Wiley & Sons, Inc. New York. p. 1069.

2 Dana's *System of Mineralogy*. p. 1063.

success, Professor William M. Agar's notes. (Am. Min. Vol. 6) (Unfortunately Professor Agar's notes not being at hand, the writer can give no more information than that one of the places was supposed to be on the road east from Natural Bridge and about 1½ miles from the village.) It was easily found and consisted of several large limestone pits from which the stone had been removed and burned. These were several hundred yards south of the main road; a dirt road winding down thru a pasture overgrown with birch and pine trees leads to them. Limestone was here in abundance but no sign of any accessory minerals except a small pocket of quartz and calcite crystals that was discovered on the edge of the largest pit. So where was the Pyroxene, the Titanite and Wernerite that Professor Agar said were to be found here so abundantly? No sign of them in the pits or on the dumps, we searched carefully. So in discouragement we gave up and started back for the car. Then it was that our Yankee nosiness overcame us and the writer, instead of plodding back over the dirt road, began to push thru the bushes and birch trees first 100 yards to the right of the road, then back to the road, then 100 yards to the left of it. About the third zig or it may have been the fourth zag he nearly fell into a small blasted out pit about 20 feet long by 10 or 15 feet wide and not over 4 feet deep. Here were the minerals! Here was faintly blue silky Wernerite, some of it showing crystal faces. Here was Titanite, small brown perfect crystals in Wernerite and large brown broken pieces some of them as large as a saucer, and showing crystal faces. Here were Pyroxene crystals as large as your thumb and just as long. Here was Paradise!!!!

Now did it pay to look around? What if the writer had sorrowfully tramped back to the car without giving a thought to what the pines and birches in the vicinity might conceal? There would still be a lot of good mineral specimens left in that pit to disintergrate in the rain and frost. Instead of that they now, by inherent inquisitivness, add their bit to a still growing collection.

A New locality found near Cornish, Me.

If the above isn't enough to convince the reader let him go on and consider the road cut in Cornish, Maine, just over the line between Cornish and Limerick. Many a collector has pounded at the vein of Epidote, Calcite and Essonite Garnet that was exposed a number of years ago when the grade was lowered. What they got is problematical for when the writer found the place it was pretty well battered and nothing was obtainable except "chunks" of the above named minerals, which don't after all make very interesting specimens. Yes, many a collector had worked on the exposed vein, but NONE had bothered to climb the hill to the West and give it a thoro going over. There were ledges up there. They could be seen from the road. Then was it not worth a collector's time to look around up there? It was!!!! In fact it was worth several visits. For the first one brought to light an outcrop of the ledge containing cavities filled with small perfect Adularia crystals. Another visit disclosed veins of Vesuvianite from which good crystallized specimens were obtained. But the best discovery of all required several trips in order to clean out the pocket of Essonite Garnet that was found in a ledge far up on the hill and out of sight of the road. Yes, several visits in which a quart of loose garnet crystals were dug out and the lining of the pocket removed. This last operation being decidedly no success tho it did yield a slab about 4"x6" covered with Essonite Garnet crystal faces upon which was perched one perfect garnet crystal slightly smaller than a golf ball. Yes it paid to look around that hillside, tho no other collector had ever thought so.

A tourmaline occurrence near King's Mt., North Carolina

And so it has gone thru more than eight years of active collecting. Why no later than the past summer this exploring habit turned defeat into victory. We had gone over to King's Mt., North Carolina, the writer and two boys who sometimes go along with him. We had "borrowed" their mother's largest frying pan and

they were to receive a lesson in panning. The creek which runs past the Spodumene mine near King's Mt., producing some Cassiterite sand, was to be the object of the lesson. But "The best laid plans etc." The creek produced sand all right but in such small quantities that it would have taken years to fill the small jars which had been brought along as receptacles. So giving up the panning as a bad job we walked up the creek, "Just to see." We saw the sluices where the sand had been washed in times past. We saw the bank from which it had been dug, but it remained for the older of the two youngsters, Owen Moore Evans, to see the mineral. He picked up a Black Tourmaline crystal about ½"x2" and holding it out in his hand asked. "What is this?" That started the hunt. We traced Tourmaline crystals and pieces of crystal up a nearby hillside to almost the top. They had washed down apparently from above. This was proven the case when at the top of the hill we came out in a corn field, and there between the rows of corn Black Tourmaline crystals were scattered all over the ground. You could have filled a basket. You could have filled a wheelbarrow. Lacking these we filled our pockets, the frying pan, even the writer's felt hat was pressed into service. They were not as a whole good specimens. Just broken three sided crystals of Black Tourmaline from ½" in diameter to 1½", and from 1" to 3" in length. But there were in all that we carried off, fifteen nicely terminated specimens of this shining black mineral, free from all matrix and nearly as sparkling as those stubby doubly terminated crystals that we used to dig up at Pierrepont, N. Y.

Owen Moore Evans and Jackie Evans with the black tourmalines from King's Mt., N. C. The youngster holding the hat is Jackie.

So it pays, this habit, this inquisitiveness, this "Let's see it all before we leave." Pays in minerals and pays in that hard to define sense of accomplishment that every collector feels when he leaves a locality knowing that he has just added some more good material to his collection.

MONAZITE NEAR MARS HILL, N. C.

By KENT C. BRANNOCK

If you are looking for a place where large crystals of monazite can be found, here is a good locality NOT to visit. Although many textbooks list Madison county, North Carolina, as a source of monazite little or none can be found there today.

After many hours of walking and inquiring I finally found the old Corn monazite mine, some four miles southwest of Mars Hill. An afternoon of searching turned up the following:

One dilapidated zircon crystal in a piece of kaolin. The crystal was about an inch long (until it fell apart.)

Several small specimens of magnetite and ilmenite.

No monazite.

The rocks of this section are principally Carolina and Roan gneiss and Cranberry granite. In the early part of the twentieth century a shaft was sunk into what appeared to be decomposed Cranberry granite and several good specimens of monazite were obtained. One rough crystal weighed almost sixty pounds, but the best one found was part of a mass which weighed six and one-half pounds, made

(*Continued on page 89*)

MINERAL COLLECTING IN UNPROMISING LOCALITIES

By FRED DUSTIN

A hundred years ago, the section of country surrounding my present residence, Saginaw, Michigan, was a sportsman's paradise. Game was so abundant and fish so plentiful that the earliest settlers subsisted largely on the products of forest and stream. As emigrants became numerous, the game decreased in like ratio, so that by 1875, old men were talking of the scarcity of fish and game, but a friend of mine, who as a boy of fifteen, came here in 1878, has told me many stories of very good hunting and fishing: how he killed wild turkeys; the swarming partridges and other game birds, to say nothing of myriads of black and gray squirrels with occasional fox squirrels: how not infrequently deer were shot within the confines of the county. He said that when the family wanted a black bass for dinner, it was just a matter of walking down to the foot of the rift, forty rods below the house, and with any bait from a worm to a frog, casting out and hauling in a two-pound bass. When I came to Saginaw about ten years later, I marvelled at the enormous flocks of wild ducks that nested or in autumn frequented the great marsh beginning a couple of miles south of the city, as well as the numerous snipe, rail, woodcock and other birds, also the great catches of fish taken by hook and line, or hauled in by commercial netting. Nearly every year for several seasons after I came, bears were killed, and wildcats (the bay lynx) were often brought to town by hunters. Today, most of the hunting is for the imported pheasants, while as to fishing, there is plenty of it, *but very few fish*, for they have been fished out, although the persistent fisherman may be rewarded by a few minute perch or diminutive rock bass. If he has an excellent appetite, and is willing to sit for a half or a whole day with a wad of dough on his hook, he may enjoy the "sport" of hauling in another foreign importation, a huge-scaled, mud-flavored, coarse-grained German carp, a fish, that like many other things German, has very little to commend it except its size and numbers, its capacity for roiling up the waters, eating the spawn of other and better fish, and poking its Hitler-nose into every creek and bayou into which it can force its way.

If we apply the present game situation in part to many an amateur mineral collector, we will find a parallel represented by the word scarcity, for there are many places in our country, where covering large tracts, there are no rock outcroppings. Add to this the not infrequent situation that through financial or other circumstances, collectors young or old, are apt to be discouraged by their handicaps and say: "It is of no use: I have no opportunities, and my collecting must be by proxy. I can read of what others do, but as for myself, collecting is out of the question."

It is for these presumed unfortunates that this paper has been written, to endeavor to show that there are always possibilities for one who persists and perseveres, so if he cannot collect beryls and tourmalines, he may at least find jasper and pryite. As I happen to belong to the body of would-be collectors mentioned, it is out of my own experience that I have written.

Saginaw Area Covered by Glacial Drift

For fifty-five years my residence has been in a flat, alluvial part of Michigan, where the bed rock is deeply covered with what geologists call glacial drift, brought down from the north and northeast in the Ice Age, and comprising large sandy tracts, mostly morainal, with great level marshes but little above the surface of Lake Huron. It is drained by a system of streams, spreading fan-like, and finally converging to form a sluggish estuary of Saginaw Bay called the Saginaw River.

These rivers, especially those from the east and south, have in some places cut quite deep channels, exposing boulder-beds, and on their upper courses exposing the carboniferous formation, which in this State is saucer-shaped, the deepest part underlying the vicinity of Saginaw. There is no prominent rock outcrop within many miles' distance, and where we find it, in one place it is sandstone, and farther away at Bayport and Point Au Gres, we find a long rim of limestone called by geologists the Maxville or Bayport, and filled with chert nodules, with occasional pockets of calcite crystals of varying types. While it is not a promising field for the amateur, if he has the means of conveyance and the time to spare, he may gather some nice specimens. In these days of ridiculously short hours and working days, it is quite possible to make trips that were entirely out of the question for me, while my own experience will show that with vastly more opportunity, the boy or man, to say nothing of the girl or woman who is interested in rocks and minerals, may reap quite a harvest even from apparently sterile soil.

Author Became Interested in Minerals at an Early Age

I think that my own interest in minerals was born in me, but there was no opportunity to develop it: no education except what was afforded by what in the Middle West is called "the eighth grade." I well remember as a little boy, my curiosity about "pretty" or "funny" stones: of passing time and time again through a miniature canyon in the slate rock near my home a few miles east of the Hudson River in New York: of finding shining pieces of "isinglass," as we called it, mica brought down from its mother-rock in the Adirondacks, and dropped by the waters of the streams or earlier glacial action: of queer pyrite concretions which we boys argued over, some claiming that they were cannon and musket balls from the nearby Saratoga Battlefield, or as others declared, "thunderbolts." They were quite brittle and easily broken revealing their brassy yellow color, causing further speculation.

It was not until I began to collect Indian artifacts, and to study them, that my interest became an intelligent one, for the different minerals from which they were formed excited my curiosity. I presume that in the last forty years I have collected in the field at least three thousand arrowpoints and proportionate numbers of other specimens of Indian craftsmanship, and will now enumerate some of the different minerals or rocks used in their making.

Some Minerals Used by Indians

Arrowpoints, scrapers, drills, cutting-blades and perforators of chert, jasper, translucent chalcedony, crystal quartz, quartzite, pitchstone, felsite and indurated sandstone. "Bird-Stones", gorgets, pendants, and "banner-stones" of red, black, purple, brown and green slate, either of solid colors or banded. Axes, adzes, and gouges of granite, syenite or gneiss. Pipes of catlinite, sandstone, slate or argillaceous rock. Steatite or slate tubes or tubular pipes. Copper artifacts, some of them showing the spots or patches of native silver characterizing them as Michigan products, and rarely, a "bird-stone" of beautiful porphyry has been added to the list, which is by no means complete.

Some Minerals Found by Author Around Saginaw

As to minerals and gem stones, I have collected fine specimens of gray agate, blood-red jasper, wonderful varieties of fossil coral, one or two types of which in West Michigan are known as "Petoskey stones," or sometimes as Petoskey agates, which are calcified and not silicified, although I have a few specimens in which the replacement material has been silica, and as I remember, these were all from prehistoric sites so that I owe them to some Red Man long dead, who was himself a collector and admired beautiful things. From these ancient sites, I have obtained pieces of zincblende, and once

or twice galena, and on one occasion, a nodule of iron ore which proved to be magnetite, while rarely an artifact of hematite or a lump of that mineral would be found; also "Indian paint," in the form of deep red or yellow limonite. Native copper, nodules of marcasite, which on long exposure to the air, gradually fell into powder.

From the boulder-beds cut through by the streams, I have many specimens of jasper, largely derived from disintegrating boulders of jasper conglomerate having their origin in a great ledge or deposit a hundred miles north of Sault St. Marie. Some of them are red of various shades, others brown, black, bluish or rarely, green.

A source of beautiful pyrite crystals was a coal washery in the city, where for many years the "slack," or fine coal resulting from mining operations in the vicinity was washed and the dirt removed, leaving the pure coal. All heavy impurities were separated, among them what the miners call "sulphur," it being massive pieces or nodules of pyrite or marcasite as well as crystals of the former.

In my collection I have a little glass-covered case about 6″ x 7″ containing eleven cut gems. With one exception, the pyrite, they were collected from old Indian village or camp sites, and five or six were from refuse fragments of material which had been used by the aborigines in making arrowpoints or other artifacts. They are sard, blue jasper, dark brown jasper speckled with red and black, opaline chalcedony, plasma, gray agate, red and deep brown banded jasper, lydian or morion stone, whitish chalcedony, pyrite and red jasper. They make a pretty display, and some of them can hardly be excelled in beauty, and would grace any collection. Their chief interest, however, is the fact that they were gathered by an amateur from sources of the most unpromising character, in every case not from their places of origin.

A Quarry Noted for Chert Specimens

In closing I will speak of one locality where I have been able to obtain from the original rock, some fine specimens of chert and crystal calcite. I only spent an hour at the place, as I was one of a party, and dependant on others for transportation. Passing through Saginaw is the National Highway 23, and about fifty-seven miles northeast, half way between the villages of Omer and Au Gres the road passes a quarry on the right. It is in a low ridge of limestone extending northwest and southeast. To the casual observer, this small quarry holds little or nothing of interest, and I doubt that in a thousand cars passing, one even slows up to look at it. To the person interested in rocks and minerals, it has considerable interest, while to the archaeologist it has a quite important significance, for here, among other places, the Indian resorted to obtain nodules of chert from which to fashion his arrow-points and other "flint" artifacts. It is these chert nodules which especially attract attention, for there is no other place known to me where they show as odd and fantastic forms as they do here, although it is likely that the several outcrops along this ridge at considerably separated distances for eleven or twelve miles, may produce the same wide variety of forms seen here. "Cannon-balls," being almost perfect spheres of various sizes; heart-shaped, "stone turnips," "eggs," and "onions;" "potatoes" and even hour-glass and dumb bell forms are among those I have seen, as well as nondescript shapes. The blasting incident to the removal of the rock, usually shatters the chert nodules, but in the undisturbed walls there may be seen hundreds, and occasionally whole ones which have escaped the force of the blasts can be collected. I obtained some very fine specimens of brown calcite crystals, and saw others that were broken up by the operations. At times nodules are hollow, and lined with chalcedony or quartz crystals, or both. Very rarely they may contain calcite. The nodules are not large; none that I saw

were over six inches in diameter, although at Bayport, they are occasionally found up to eight inches. More time at this quarry might have revealed other minerals, and I hoped to again visit it, but up to date have not done so.

I have tried to show in this paper, that the collector or would-be collector, need not be discouraged because he does not have Mount Mica in Maine or the tourmaline and kunzite regions of California at hand, for it is most likely that within reach he may collect worth-while specimens of minerals and rocks. Even though poor in purse, something awaits him if only he has the seeing eye, and behind that, the attentive mind which will guide him to concealed riches often lying beneath his feet, where there is much to be found, studied, and preserved. Even a sandy moraine may give him something he may treasure; a prosaic river-bed something to be cherished and exhibited, or some wind-blown field, a beautiful specimen not only of the arrowmaker's art, but a mineralogical gem that he will preserve as a prize, and (I hope) finally leave to some permanent institution, as a part of his little addition to the knowledge, pleasure and interest of those who shall come after him.

LET'S PUT OUR DUPLICATES TO WORK

By JOHN ALBANESE

I was born and raised in Brooklyn, N. Y., where mountains, mines and quarries are unknown. In school I read about and saw illustrations of cows that gave us milk, the elephant, giraffe and the zebra. I also read about and saw illustrations of iron, copper and gold mining. I was 14 years of age when I first saw a cow on the hoof and was 28 years of age when I first saw iron ore about which I had read volumes. Needless to say, my conception of these things were radically changed when I first saw them.

Our teachers in Brooklyn realized the many educational advantageous of taking classes to the Bronx Zoo but it was impossible for them to take classes to mines or quarries. I think that mineral collectors can be of great help in acquainting school children with minerals and ores.

We all have duplicates of the common minerals and ores. It would be a good idea if many of us were to contact schools or teachers interested in the study of mineralogy. We could donate small collections to them or else install permanent exhibits. I have been donating duplicates to several teachers for school work —one has a permanent exhibit in her classroom (in Belleville, N. J.) to which I frequently made additions.

I also think it a good idea if we either give to teachers some of our old copies of *Rocks and Minerals* or else donate a year's subscription to this very interesting magazine. as it is a good educational medium for the children. The teacher in the Belleville school reecived such a subscription with my compliments.

Let's all dust off our idle duplicates and give them to the schools so that the young people in our communities may acquire a more intimate knowledge of mineralogy. And last but not least, give talks or lectures to them on our very fascinating hobby.

MONAZITE

(*Continued from page 85*)

up of crystals in parallel position some of which were well terminated.[1]

The shaft has since filled with dirt and there is apparently no monazite left on the surface. The monazite originally obtained is now in the hands of private collectors and in several museum and college collections.

1 *Zircon, Monazite and Other Minerals Used in the Production of Chemical Compounds Employed in the Manufacture of Lighting Apparatus.* By Joseph Hyde Pratt, N. C. Geol & Econ. Survey, Bull. 25, 1916, p. 47.

PROPOSED EXPANSION PROGRAM OF MINERAL AND POWER DEVELOPMENT IN THE UNITED STATES

A proposed expansion program of mineral and power developments in the United States scaled to meet the enormous demands of the President's war production schedule was laid before the Senate on February 16, 1942, by the Secretary of the Interior Harold L. Ickes.

In response to an inquiry from Senator Joseph C. O'Mahoney of Wyoming, Chairman of the sub-committee which has been investigating the use of the resources of the West, Secretary Ickes submitted details of a program which would use low-grade domestic ores to help make the United States independent of foreign minerals during the emergency, save millions of tons of shipping and possibly the use of Navy vessels for convoy, and would also look toward the rounded development of the West. It included sample power projects out of many possible developments in the West. These 17 sample projects in 12 states would provide ten billion kilowatt hours of energy annually.

Secretary Ickes' reply to Senator O-Mahoney showed that the Department of the Interior was ready, upon Congressional authorization, to act immediately in harnessing to the war effort the vast mineral and power resources of the Nation. Basic information requested by Senator O'Mahoney, which is covered in the multi-point resources mobilization program reported by Secretary Ickes, included the financing of mineral and industrial development, avoiding monopolization, and the development of additional power facilities to meet war requirements, and later to serve America in peace.

The program includes large-scale development of low-grade ores in order to make a "far greater use of the mineral resources of the Nation than has yet been made," a plan of action which the "Department of the Interior is and steadily has been for."

Major points of the program are:

MINERAL DEVELOPMENT PROGRAM

1. To solve "the problem of securing wide and general use of new processes" the Department asks Congress to instruct the Bureau of Mines to "push its work to a triple-speed basis" on the development of: "means for the processing of low-grade manganese ores, or alunites and magnesites;" plants to use new iron ore reduction processes producing sponge iron for later smelting, economical extraction of such metals as "copper, lead and zinc from our abundant resources of low-grade ores," and increased production of the "alkali and alkaline earth metals—lithium, sodium, strontium, barium, and beryllium." To further the utilization of mineral resources by the power generated at Bonneville and Grand Coulee dams, Secretary Ickes proposed an "electro-development laboratory, to be situated in the Pacific Northwest."

As part of this general problem, "all enemy alien patents and processes" are to be examined and tested, while "all American-owned patents and processes for minerals needed for winning the war" should be "made available for the confidential use of the Bureau of Mines" with a view toward "recommending the most effective processes." The Bureau of Mines will stand ready "to provide every user of processes developed by the Department, or recommended by it, with part of the time of a skilled engineer." Secretary Ickes also proposed that records of all mineral development in the areas listed be made available confidentially to the Geological Survey and the Bureau of Mines in order that they may utilize the information to speed up the exploration work."

2. To break the "second major bottleneck" in the "the production both of ores which had been considered strategic, such as tin, antimony, mercury, and nickel, and ores that had not previously been considered strategic, such as copper, zinc, lead, and iron," Secretary Ickes proposed that "Congress make funds available for exploratory work by the Bureau of Mines and the Geological Survey for

copper, iron, chromite, zinc, and lead," involving the assignment of 250 additional engineers and geologists to intensive exploratory work in "low-grade areas" in a tentative list of 22 States and Alaska.

3. To break the "third major bottleneck" of securing capital for the development of short-lived or low-grade ore bodies and for mills or smelters to develop such low-grade materials," Secretary Ickes proposed that when requested by the War Production Board, the "Department of the Interior should be given the power to certify to the Reconstruction Finance Corporation for loans to companies or individuals seeking to develop low-grade ores or contracting mills or smelters for the production of these essential war minerals," and that this certification be construed as an "obligation on the Reconstruction Finance Corporation by amendments to the Reconstruction Finance Corporation Acts. Finally, "if private capital or competent management is not interested in developments of considerable risk," the Bureau of Mines be allowed "to develop the mines or custom mills or refineries and to be given the same long-term contracts as are offered to private citizens."

Secretary Ickes said that he would forward later a "draft of mineral and power development legislation" in accordance with Senator O'Mahoney's request, "intended to break the financial bottleneck," and containing provisions establishing a "Minerals Policy Board of nine, including representatives of the Secretaries of War and Navy and the Chairman of the National Resources Planning Board," in addition to providing for "the initiation of regional marketing studies," and "a leasing system which will tend to prevent the non-use of needed resources."

4. Recommendations for manganese development sufficient to produce approximately 2,683,000 long tons of manganese metal, enough for 429,000,000 tons of steel, and providing for the establishment of 8 large milling plants, 3 hydrometallurgical processing plants and 1 matte smelting plant; all of which would save 1,112,680 tons of shipping per year from Brazil and Cuba to the United States. Deposits in 13 districts of 8 states would furnish the necessary ore tonnage.

5. Recommendations for the revision of aluminum manufacturing practices to make the fullest possible use of new processes developed by the Bureau of Mines which utilize common domestic shales, natural alums, leucites, glauconite sands, feldspars and aluminum-bearing tailings from porphyry copper deposits to produce alum in small plants. The alum can be shipped to large centrally-located plants for conversion into alumina, the basic aluminum material, by the use of another process recently developed by the Bureau of Mines.

6. Three new processes for production of magnesium are reported in final stages of development by the Bureau of Mines, in addition to other processes which extract magnesium from widely-occurring rock formations instead of the usual sea water or relatively scarce deposits of magnesite. If put into wide use, "they will permit the production of magnesium by processes not privately controlled and will insure the continuation of the magnesium industry after the war period on a non-monopolistic basis."

7. Low-grade chromites, capable of producing 1,000,000 tons of metallurgical grade concentrates for chromium production, can be utilized when processes being developed by the Bureau of Mines are put into productive use. About 250,000 tons of this grade concentrates were required in 1941.

8. Recommendations for further exploration of carnotite deposits to "supply most of the victory needs" for vanadium for tool steels; and development of methods of vanadium recovery. Additional vanadium "can be obtained from the very large known reserves of titaniferous magnesite which occur particularly in California."

9. The report recommended that Congress utilize the analyses of the Interior Department-created Consulting Committee on Northwestern Phosphates when they are completed "as to superphosphate and phosphorus, or alternatively, vana-

dium; and that if warranted, Congress support the construction of such a plant as may be proposed for the war effort and for the service of the farmers in the West."

POWER DEVELOPMENT PROGRAM

10. In regard to the electric power needs for processing and fabricating minerals for the war program, and to give proper consideration "to the needs of the states in safer areas behind the mountains as well as to the needs of the coastal states," construction of 17 sample power projects offering 1,480,000 kilowatts of installed capacity, and a maximum total annual production of 10,190,800,000 kilowatt-hours was proposed. These additions alone would be enough to produce more than a billion pounds of aluminum or magnesium annually.

Both steam and hydro plants are listed at an estimated total cost of $350,603,000 and would "result in self-liquidating returns, within 40 years, at prices between 2.64 mills and 3.06 mills per kilowatt-hour" with normal costs. Normal costs of these power projects are based on construction estimates as of January, 1940, and total up to $271,713,000. Secretary Ickes proposed that the difference between the normal cost and the present cost, termed an "abnormal increase in construction cost," should "be paid off, but that the repayment be postponed until after the end of the customary 40-year period during which the normal cost of the projects would be liquidated."

Because a "major bottleneck in the manufacture of generating equipment is in the forging of shafts," the report pointed out that the proposed type of projects "may press less upon the bottleneck of forgings than many other projects which might be considered" since they will use smaller shafts more readily available. In addition "the power contributed by these projects carries a very high ratio of firm to secondary power, and is therefore more valuable for the electro-metallurgical industries."

An 8-point yardstick for measuring priority of allocations for power construction included under Point No. 1: "Only the projects essential for the successful and rapid prosecution of the war should be constructed now."

The report stated that "all of the hydroelectric projects proposed, together with the steam auxiliary plants, would contribute to the irrigated agricultural output of the West necessary to meet war needs for food and fiber, and would aid in maintaining the stability of the West in the post-war period. Irrigation is the major one of the other purposes listed."

Also included, with a request to the Committee "to give consideration to the following statement," was a list of projects recommended by the Bonneville Power Administration because they "could go into action fast, and would require relatively small amounts of vital materials for the return in energy that they would give." These included requests for "high priorities on the six Coulee units," . . . 'high priorities on the shafting of the last four Bonneville units," . . . and suggested action by the proper authorities for the "elevation of Ros Dam on the Skagit River, belonging to the City of Seattle," and "acquisition of the Rock Island Dam of the Puget Sound Power and Light Company." As additional possibilities, Nisqually Dam and Umatilla Dam, both in Washington State, were mentioned.

The report quoted continued urging by Secretary Ickes that defense agencies give consideration to locating aluminum, magnesium, and other power consuming loads such as zinc on the public projects in the West so that the plants will be useful at the end of the war instead of tieing them up to the closing-down policies of companies with Eastern interests.

"The measures I have suggested above, under the heads of mineral development and power for the West," said Secretary Ickes, "would do something to put individuals and small companies into action for the war and for a few years afterward. While that would be something definite toward winning the war, it would not be any great underpinning for the post-war situation in the West."

"I believe," Secretary Ickes declared,

"that the decisions and actions now being taken will increase the spread of large industry control of the resources of the West and of the Nation rather than the contrary."

The report also included a review and an outline of the part played by the Department of the Interior in encouraging greater war production. Although activities promoting 100 octane refinery construction and oil resources exploration were mentioned, Secretary Ickes said that "the Department's oil program will be announced separately."

Also cited in detail for their efforts in the war program were the Division of Power, the Bureau of Reclamation, the General Land Office, the Grazing Service and the Office of Indian Affairs.

BREAKDOWN BY STATES

Breakdown by states of the extensive program of mineral and power development proposed by Secretary Ickes, follows:

ALABAMA

Exploratory work on iron ore deposits.

ARIZONA

Exploratory work on copper deposits in the Verdi, Globe, Pioneer, Miami, Mineral Creek, Ajo, Silver Bell and Warren districts.

Construction of a milling plant to produce 240,000 long tons of manganese metal at Artillery Peak, also at Parker Dam for 30,000 tons.

Mining of 3,000,000 tons of manganese ore in the Artillery Peak district, and 100,000 tons in the Parker Dam District.

Power project at Bridge Canyon, Colorado River, Arizona, of an ultimate 600,000 kilowatts capacity. Present cost of construction, including lines and substations is $173,000,000.

ARKANSAS

Construction of a milling plant to produce 294.000 long tons of manganese metal at Batesville.

Mining of 1,500,000 tons of manganese ore in the Batesville district.

CALIFORNIA

Construction of a milling plant to produce 30.000 long tons of manganese metal at Parker Dam.

Mining of 100,000 tons of manganese ore in the Parker Dam district.

Exploration of titaniferous magnesites for vanadium production if greater supply is needed.

Exploratory work on copper deposits in the Engels and Spring Garden districts; on iron ore deposits, and also on chromite deposits.

Power project at Sacramento, a 50,000 kilowatt steam plant. Present cost $6,250,000.

Power project at Newark, a 150,000 kilowatt steam plant. Present cost is $18,750,000.

COLORADO

Exploratory work on copper deposits in the Bonanza district, on lead in the Leadville, San Juan and Rico districts; on zinc in the Leadville, Eureka and Rico districts, on carnotite (vanadium) deposits.

Power project, the Fort Collins Plant, Colorado-Big Thompson project. A steam plant of 100,000 kilowatts capacity. Present cost is $12,500,000.

IDAHO

Exploratory work on lead deposits in the Shoshone and Bonner districts; on zinc deposits in the Shoshone district.

Power project on Scriver Creek, Mountain Home, of 120,000 kilowatt capacity, multiple-purpose installation. Two plants of 30,000 and 90,000 kilowatt capacity each. Present cost is $21,000,000 including proposed transmission lines.

Power project at Palisades on Snake River, of 30,000 kilowatt capacity, multiple purpose. Present cost, after allocations of portion of construction cost to irrigation and flood control, is $11,900,000.

KANSAS

Exploratory work on lead deposits in the Tri-State District; and on zinc deposits in the Tri-State district.

MICHIGAN

Exploratory work on iron ore deposits.

MINNESOTA

Exploratory work on iron ore deposits.

Construction of a milling plant to produce 210,000 long tons of manganese metal, and a hydro-metallurgical plant to

produce 335,000 long tons, both in the Cuyuna Range district.

Mining of 7,000,000 tons of manganese ore annually in the Cuyuna Range district.

MISSOURI

Exploratory work on lead deposits in the Tri-State district and southeast section of the state; on zinc deposits in the Tri-State district.

MONTANA

Exploratory work on lead deposits in the Summit Valley district, on zinc deposits in the Summit Valley district, and also on chromite deposits.

Construction of a custom mill to produce 90,000 long tons of manganese metal at Philipsburg.

Mining of 500,000 tons of manganese ore in the Philipsburg district.

Mining of low-grade deposits of chromite for production of chromium by new process developed by Bureau of Mines.

Power project at Canyon Ferry on the Missouri River, of 36,000 kilowatt capacity, multiple-purpose installation. Present cost is $15,000,000.

NEVADA

Exploratory work on copper deposits in the Battle Mountain, Yerington and Robinson districts; on zinc in the Pioche district.

Construction of a milling plant to produce 150,000 long tons of manganese metal, and a hydro-metallurgical plant to produce 291,000 tons, and an electrolytic manganese plant to produce 12,000 tons annually, all at Las Vegas.

Mining of 2,850,000 tons of manganese ore at Las Vegas, 5,000,000 tons at Pioche and 38 0000 tons at Valmy.

Mining of dolomite deposits near Sloan for magnesium production.

Power project at Mystic, Truckee Storage project, multiple purpose, of 22,000 kilowatt capacity. Present cost is $6.650,000.

NEW JERSEY

Exploratory work on iron ore deposits.

NEW MEXICO

Exploratory work on copper deposits in the Central, Fierro, Burro Mountains and Lordsburg districts, on lead in the Willow Creek district, on zinc in the Willow Creek district, and also on iron ore deposits.

Construction of a milling plant to produce 17,500 long tons of manganese metal at Deming.

Mining of 150,000 tons of manganese ore in the Deming district.

Power project at Albuquerque, the Albuquerque Power Development, a steam plant of 25,000 kilowatts capacity, multiple-purpose. Present cost is $4,205,000.

NEW YORK

Exploratory work on iron ore deposits.

NORTH DAKOTA

Power project on Missouri River, near Bismarck. A multiple-purpose steam plant of 25,000 kilowatts capacity. Present cost is $4,125,000.

OKLAHOMA

Exploratory work on lead deposits in the Tri-State district, and on zinc in the Tri-State district.

OREGON

Exploratory work on zinc deposits in the Lane district, and on iron ore and chromite deposits.

Rapid completion of Bonneville-Coulee power system.

PENNSYLVANIA

Exploratory work on iron ore deposits.

SOUTH DAKOTA

Construction of a plant utilizing the matte smelting process to produce 315,000 long tons of manganese metal at Chamberlain district.

Mining of 50,000,000 tons of manganese ore in the Chamberlain district.

Power project at Mobridge, a multiple-purpose steam plant of 25,000 kilowatts capacity. Present cost is $4,125,000.

TENNESSEE

Exploratory work on copper ore deposits in the Ducktown district, on zinc in the Jefferson and Washington districts, and on iron ore deposits.

TEXAS

Power project at El Paso, the Rio Grande project. A steam plant, multiple-purpose of 25,000 kilowatts capacity. Present cost is $4,205,000.

UTAH

Exploratory work on lead deposits in the West Mountain, Rush Valley, Blue

Ledge and Tintic districts, on zinc in the West Mountain and Blue Ledge districts, and on iron ore deposits, and carnotite (vanadium) deposits.

Construction of a custom mill to produce 80,000 long tons of manganese metal, at Delta, and a hydro-metallurgical plant to produce 630,000 long tons, at Garfield.

Mining of 740,000 tons of manganese ore in the Delta district, and 100,000 tons in the Tintic district.

Power project on the Colorado River at Dewey. A multiple-purpose project of 150,000 kilowatts capacity. Present cost is $50,000,000.

Power project at Lake Utah. A steam plant of 50,000 kilowatts capacity. Present cost is $6,650,000.

WASHINGTON

Exploratory work on copper ore deposits in the Chelan district, on lead in the Metaline Falls district, on zinc in the Metaline Falls district, and on iron ore and chromite.

High priorities on the manufacture of six Grand Coulee units to provide total additional firm energy production of 1,536,800,000 kilowatt hours.

High priorities on the shafting of the last four Bonneville units, which may gain as much as 500,000,000 kilowatt hours.

Construction of Umatilla Dam, now being considered by Congress, as included in the present Rivers and Harbors bill.

WYOMING

Exploratory work on chromite deposits, in addition to the trona explorations now being conducted.

Power project at Kortes. Kendrick project, a multiple-purpose plant of 30,000 kilowatt capacity on the North Platte River. Present cost is $8,310,000.

Power project at Heart Mountain on the Shoshone River. A multiple-purpose hydro-plant of 10,000 kilowatt capacity. Present cost is $1,060,000.

TERRITORY OF ALASKA

Exploratory work on chromite deposits.

WITHERITE DEPOSITS IN THE UNITED STATES

Witherite, the cheapest source of barium nitrate for priming mixtures in incendiary bombs, has so far been commercially available only in Great Britain. Severe shortages have developed, and in the future the American arms program may be forced to depend at least partially upon sources in the Western Hemisphere.

Witherite occurrences in the United States have been reported in Alaska, California, Kentucky, Montana, and Tennessee, but only those in California have proven to be of commercial importance. The known deposits in Kentucky and Tennessee appear to be small and of mineralogic interest only. The occurrences in Alaska and Montana, however, contain considerable witherite, but the extent of each of the deposits is still unknown. The Alaskan deposits are in the northeastern corner of Kuiu Island in Southeastern Alaska. According to the Alaskan Department of Mines those deposits examined by them consist of beach pebbles and scattered, small, irregular veinlets of witherite, although the discovery of a 16 inch vein of witherite with associated stringers has been reported to them. The Montana deposits have been described by M. B. Fuller in "An Occurrence of Witherite in the Altyn limestone at Many Glacier, Montana" (*American Mineralogist*, vol. 9, No. 7, July 1924, p. 154). This occurrence (in Glacier National Park) is in the lower beds of the Altyn limestone immediately above the plane of the Lewis overthrust fault, along the gorge below Swiftcurrent Falls at Many Glacier. where from 80 to 100 feet of the limestone contains witherite in veinlets and solution cavities. The witherite at this locality is said to occur in flat masses 1 to 6 inches in thickness, parallel to the bedding; in thin lenses 1 to 3 inches thick and 6 to 18 inches across; and in very irregular lumps up to 2 feet in diameter. It is stated that an analysis shows the material to contain 98.1 percent $BaCO_3$.

(Bertrand L. Johnson, Bureau of Mines—*Mineral Trade Notes*, Dec. 20, 1941, pp. 26-27).

Editor's Note: The deposit in Alaska has been described in more detail by Victor Shaw, "Witherite in Alaska," *Rocks and Minerals*, March, 1932, p. 24.

A MODEL SOCIETY

By CLARK HARRISON

Clark Harrison, West Coast Correspondent for Rocks and Minerals.

Back in the fall of 1936 a young mining engineer by the name of Victor Arciniega opened mineralogy classes at Manual Arts Evening High School in south west Los Angeles, California. A year later quite a bit of interest was manifest by a larger enrollment, steady attendance of classes, and an additional class being added to the program.

The classes were comprized of men and women students in various walks of life, both young and old. Soon a desire to organize a club or society was evidenced. Some of the eager students wanted to join a local society but found that the society wished to keep its membership limited.

"Why not form our own society?" querried Arciniega.

So taking their instructor's advice, they got into action. On February 4, 1938, twenty-five charter members, with the aid of Arciniega and R. J. H. Mittwer, organized the Pacific Mineral and Gem Society. Arciniega was elected to serve as its first president.

A constitution and by-laws were drawn up. A dinner meeting and a field trip once a month were arranged. Arciniega's classes were accepted to fulfill the scholastic requirements of the society. Soon classes in petrology, economic geology, mining and quantitative analysis were added. Attendance approximated the perfect.

On February 23, 1939, the name of the society was changed to Pacific Mineral Society. While quite a bit of study was devoted to gem stones, yet the chief interest was minerals; so the name was changed to prevent any misleading or confusing thought with the public.

On September 20, 1939, the society incorporated as a non-profit corporation. The cost of incorporating was very small, and many advantages were gained. As was explained, in an unincorporated society each individual member is personally liable for all the debts and obligations of the society, including law suits of all kinds, that might be brought against the society, but that after incorporation all individual liability passes and the corporation liability is only the amount of the assets of the corporation. The excellent legal firm of Rosecrans & Emmie of Los Angeles drew up the papers. In appreciation of the generosity and many favors conferred by this firm, Messrs. Rosecrans and Emmie were honored at the society's Christmas dinner meeting last year, and were presented with a beautiful desk set.

Their active fields have carried them into mineralogy, geology, petrology, chemistry, mining, gem stones, collecting and the lapidary art. In their constitution and by-laws the objects and purposes of the society are given: (1) To collect and study minerals, (2) To disseminate a general knowledge of minerals, (3) To provide opportunity for the exhibition and exchange of specimens, (4) To encourage social relationships among the members and the exchange of ideas regarding mineralogical and allied subjects, (5) The promotion of harmonious relations with similar organizations. The rest of the by-laws describe the functioning of the society, its rules and regulations, procedures, etc. Matters not covered will be subjected to Robert's Rules of Order as Parliamentary Authority.

Dinner Meetings Held Monthly

On the second Friday of each month a regular dinner meeting is held in the banquet room of some hotel or recreation

center. After dinner, any business matter is discussed and disposed of. Visitors are welcomed and introduced to the assembly. Next comes the guest speaker, who usually illustrates his talk with slides, moving pictures, collections or equipment. Following is a list of subjects and speakers which will indicate the scope of this work:

Microscopical Determination of Materials, by Roy E. Martindale, gemologist.

Minerals of Old Mexico, by Wendell Stewart and Earl Calvert, mineralogists.

Spectrographic Determinations, by Floyd B. Herman, spectrographic specialist, John Herman Laboratory and Assay Office.

Evolution and Development of Optical Instruments, by Milton E. Gray, Scientific Service Co.

Synthetic Crystals, by Ella G. Arciniega, teacher.

Zeolites, by Alan Tirrell, mineralogist.

Agates, by J. W. Patton, collector and mineralogist.

Manganese, by N. L. Martin, mineralogist.

Geology of the Randsburg (California) Quadrangle, by Victor M. Arciniega, mining engineer.

New Uses for Aluminum, by E. B. Hamilton, mineralogist.

Metallurgy of Scheelite, by David D. Baker, A. I. M. E.

Mining in South America, by William Val De Camp, mining engineer.

Champion Sillimanite Mine in Mono County, by C. D. Woodhouse, president of the California Federation of Mineralogical Societies.

Calico District, by James F. Underwood, mineralogist.

Applications of Ultra Violet Light, by John Shannon, Keese Engineering Co.

Precious Metals and Their Alloys, by A. I. Wildberg, Wildberg Brothers Smelting and Refining Co.

Explorations in Africa and Prospecting for Diamonds, by Duncan S. Smith, mining engineer, who has spent 21 years there.

Death Valley, by Victor Arciniega, mining engineer.

Geology and Mineralogy of Yellowstone National Park, by W. Scott Lewis, mineral dealer.

Mining in Russia, by R. W. Prouty, E. N., who has spent much time in Russia and Central America.

Milling Methods, by Norman Whitmore, Meco Assayers.

Origin of Minerals, by W. Scott Lewis, mineral dealer.

Borax, by G. A. Connell, Pacific Coast Borax Co.

Silver, an Industrial Commodity, by Dr. Alexander Goetz, Ph. D., Professor of Physics, California Institute of Technology.

Geology and Mineralogy of the Franklin, N. J., Mining District, by Ernest Chapman, collector.

Pioneering in Economic Geology, by Hugh A. Matier, geologist, Union Oil Co.

Immigrants from Space—Meteorites, by Dr. Frederick C. Leonard, department of astronomy, University of California at Los Angeles.

Strategic Minerals, by R. H. Milligan, mineralogist.

Geology and Mineral Deposits of the Searles Lake Basin, by David B. Scott, mining engineer, American Potash and Chemical Corp.

Field Trips Held Monthly

Each month a field trip is taken to some mineral or mining location, laboratories, or to view private collections. These are taken usually on the third Sunday of the month, and distances covered up to a couple hundred miles away. During New Years and Labor Day, three-day trips are taken up to distances of four or five hundred miles away. On May 29-30, 1938, a glorious two-day trip was taken to Julian in San Diego County. Will Crosby, director of the Julian Bureau of Mines, acted as host and guided the visitors around through the famous Julian-Banner district. Gold and molybdenum specimens were secured, and the group saw a gold stamp mill in operation.

On January 1-2, 1939, this society visited the once famous Randsburg District, location of big gold, silver and scheelite mines. On September 2-3-4,

The Pacific Mineral Society entering the famous Jensen Quarry near Riverside, Calif.

1931, a visit was made to the sillimanite mine of the Champion Spark Plug Company near Bishop. A steep hike of four miles up the mountain failed to daunt four women who hiked to the top, even though the weather was terribly hot. On October 7-8, 1939, they prospected at night for scheelite with ultra violet lamps (portable equipment). On New Years of 1940, an extended trip was made into Death Valley. A four hundred mile trip was made to Tonopah, Nevada, over the Labor Day holidays of 1940. On January 18-19, 1941, the Cargo Muchacho Mountains in the southeast corner of California were invaded. On Labor Day holidays of 1941, a three-day trip was made to Goodsprings, Nevada. As a hint to what kind of success they have, on this last trip they found: Heterogenite (cobalt oxide), pink dolomite, galena, anglesite, cerussite crystals, plumbojarosite, wulfenite, mimetite, jaspery breccia, jarosite (hydrous iron sulphate), limonite with hemimorphite crystals, red ochre, cuprodescloisite, smithsonite, hydrozincite, malachite, azurite and turgite. These are only a few that were found.

One favorite trip is that to the Crestmore Quarries near Riverside, where 110 different minerals have been found and identified. Other short trips are made to the beaches, mountains and desert. Often two societies make trips together.

Each Member a Collector

Each member, I believe, has a fair collection of the more common minerals. Some very fine specimens have been found. One of the finest selenite crystals ever to come out of Death Valley or possibly from any other place was obtained by James F. Underwood. This perfect specimen is a single crystal about 4½ inches high, about 2 inches from front to back and over one inch thick. Each crystal face is shown and the whole crystal is fastened on one end to a base surrounded by smaller crystals also attached to the base. The crystal is water-white and as clear as Iceland spar. It took prizes at the state federation convention twice already. Wherever there are mineral shows or gatherings, this society is bound to be well represented, and their specimens are apt to bring in the ribbons.

The beautiful lapidary works of Dr. Marsden Heard, J. F. Underwood, F. C. Bitzenburger and H. R. Ringwald are always a treat to the eyes. John R. Plumley and his wife, Elizabeth, have specialized in gold testing and analysis; Alan Tirrell and his wife, Lillian, have specialized in geodes and zeolites; Julia Bing-

Left: Parliamentarian Victor Arciniega and Geological expert Harold Eales.
Center: Lillian Tirrell, Geode specialist.
Right: Secretary Bill Oke and president Burris Bingham.

ham has specialized in bacteriology and quantitative analysis. E. B. Hamilton, former field trip scout, now resides in Honolulu. Victor M. Arciniega (hailing from Morenci, Arizona—rich copper district), past president, is technical adviser and parliamentarian. Secretary William C. Oke hails from far off Australia. They even have a publicity agent, Clark Harrison, who hails from Bourbon, Missouri, land of the Ozark Mountains. One of the senior members, R. J. H. Mittwer, spent some 30 years in the orient, mostly India. When His Highness, the Maharaja Saheb of Dharampur State (a state near Bombay in the district of Surat, India) visited Los Angeles in July, 1939, His Highness was delighted to see his old personal friend, Mittwer. Howard Kegley is the well known mining editor of the Los Angeles Times. Ernest Chapman of South Pasadena (who hails from the "Hub of the Universe"—Boston), one of the charter members of the state federation, has one of the finest collections in these parts. R. H. Milligan (who came from Norfolk, Nebraska) is field trip chairman and an X-ray specialist. The field trip committee chooses a locality for a trip; they send scouts out to study road conditions, etc.; then an expose is sent to each member about the locality, as to minerals to be found there, road information, etc.

Large Membership Not Encouraged

Of a membership of 70, twenty-seven are women. A large membership has not been encouraged since it was thought that this would prevent cliques from forming, and that a smaller assemblage would promote better understanding and maintain closer touch among members. And indeed it is a one big family. There can be no doubt as to their being one of the finest and most progressive mineral societies in the California Federation of Mineralogical Societies, if not the leading society in their field. Hail to the Pacific Mineral Society, Inc., of Los Angeles!

AN OBSERVATION ON THE PLAY OF COLOR IN FIRE OPAL

By MARK M. FOSTER

Having had six years experience in the digging of common and fire opal, the writer has noted some observations which have led him to believe that the play of color in fire opal may be due to causes other than its water content.

He has observed iridescence on freshly broken surfaces of common opal that were not due to chonchoidal fracture but to iridescence from films (almost transparent) of some mineral deposited in the opal at the point of fracture.

He has observed, in the parching summer sunlight, grand displays of opalescence coming from disintegrated films of opal adhering to clods of bentonite on the dumps, which he approached and touched. This opalescence was due to infinitesimally thin films of a white powder and the merest touch of a finger would obliterate them. Realizing the extreme dryness of these films of micrometric thinness, so common in opal fields where the opal is wood replacement, established the idea in the mind of the writer that beyond the peradventure of a doubt, that the water content of opal is not alone responsible for the play of color in fire opal and very likely is the least factor in the phenomenon of opalescence.

The past summer he made an observation which thoroughly settled the matter in his mind. In mining fire opal, he found one formed in a limb—solid fire opal showing ring growth. It broke in two squarely across the center and EUREKA! On the freshly broken surfaces were clearly visible the same mineral film as had been observed in the common opal, giving off iridescence from each ring of the same colors as the opalescence (?) in the unbroken end.

Determined to solve the riddle which had been perplexing him, he decided an analysis of the opal would help to state his case. Consequently he sent a large sample of crushed opal of all colors and textures to a nationally known assaying company for a complete analysis. Here is their report:

Combined water	6.95%
Silica (true)	85.80
Iron Oxide	1.85
Aluminum Oxide	3.22
Calcium Oxide	0.96
Magnesium Oxide	1.08
	99.86%
Gold	trace
Silver	trace
Sodium & Potassium	trace
Manganese	trace

In the meantime the writer consulted the Columbia Encyclopedia 1941 regarding the play of color in fire opal and its remarks are as follows:

"The phenomenon of opalescence is due to the interference of light waves at the surfaces of the layers of material of slightly different density of which the stone is built up. The opal is not a crystalline body but an amorphous mass of hydrous silica which in solidifying from a jelly like state, was penetrated by cracks, which later became filled with material differing in water content from the original material, hence of different density."

The foregoing quotation is evidently descriptive of opal occurring in veins.

During the past summer Dr. Chester A. Arnold, of the University of Michigan, was in the West Coast States making a study of our petrified woods. He has set forth his findings in a recently published paper from which we quote:[1]

"I am not prepared to show that replacement of *some kind* has never occurred during petrification but it seems extremely improbable, and some experiments that have been performed on petrified wood indicate that the fundamental basic process is infiltration, and not replacement." After explaining how he put petrified wood in solution with hydrofluoric acid and a skeleton of wood (lignim) remained, he in summary says: "The conclusion is that molecular re-

1 Arnold, Chester A., Ph.D., The Petrifaction of Wood. *The Mineralogist*, Sept., 1941, pp. 323 and 354.

placement is not a satisfactory explanation of the process of wood petrification. It fails to agree with observed facts."

Now making use of the analysis, the Encyclopedia, and Dr. Arnold's discovery, the writer will attempt to present his case by asking a question with the fire opal in hand which shows the annual ring growth with the mineral films of the various minerals given in the analysis.

Is it not possible, and quite likely, that different mineral oxides which had different densities and different powers of penetration, have entered the different rings, grain, burls, and spots in the wood, which possessed different powers of absorption and in that way have laid down films of the mineral oxides which when viewed at the proper angle through transparent portions of the opal, give off iridescence by reflected light easily be the cause of the play of color in fire opal?

Editor's Note: Mr. Foster's observations are on the opals of Virgin Valley, Nevada, where he is actively engaged in mining them.

GIANT FLIGHTLESS BIRDS

"An exhibit of extinct isolationists," is what Bryan Patterson, assistant curator of paleontology at Field Museum of Natural History, Chicago. Ill., calls a group of fossil skeletons of giant prehistoric birds, and restorations of them as they appeared in life, just installed at the museum. The official museum label however, refers to them merely as "Giant Flightless Birds."

The birds shown in this exhibit are a New Zealand moa and a South American phororhacoid. These birds, like the large ground birds of today represented by the ostriches of Africa and the Near East, the rheas of South America, and the emus and cassowaries of the Australian region, represent an extreme of specialization in the bird world, says Mr. Patterson. That is, they had become gradually adapted to a completely terrestrial existence which led to loss of the power of flight, and in turn made possible the great increase in bulk which they attained —moas, for example, ranged in height to as much as ten feet.

"The giant moas flourished and grew fat for millions of years in their isolated home in New Zealand, but their isolation and safety came to an end when Polynesian peoples, exploring the South Pacific in open boats, began to colonize New Zealand," states Mr. Patterson. "These invaders found in the moas a readily available source of food and appear to have killed off the last survivors by about A.D. 1300. Charred bones and fragments of the eggs of these birds have been found in fire pits and kitchen middens.

"South America, home of the phororhacoids—flesh eaters, some of which grew to as much as eight feet in height and preyed on a wide variety of mammals—was also isolated from the rest of the world for an extremely long period of time. The extinction of these birds there appears to have coincided roughly in time with the reunion of the two American continents by means of the Isthmus of Panama. After this land bridge had arisen, the southern continent was invaded by the carnivorous mammals from the north with sad results for these avian giants. However, the phororhacoids probably thrived during a period of more than 50 million years, while the moas may have enjoyed as long a span before they were exterminated."

ABSENCE OF COPPER IN DRAINAGE WATERS OF SCHUYLER COPPER MINE

By O. IVAN LEE

In his interesting article, "The Copper Boulderwhip"[1], Mr. Ronald L. Ives has speculated on the possibility of the recovery of copper from the waters of abandoned copper mines by precipitation on scrap iron. Specifically, he writes that "A careful investigation of the old Schuyler copper mines at Arlington, N. J., seems in order in this connection. Miles of workings, in a well watered copper-bearing area, are known to exist. Within sight are several large cities (New York and Newark), source of scrap iron which is locally detinned. By passing sump waters from the abandoned Schuyler mine over the waste products of the local detinning plants, copper would be produced. All that remains to be done is a detailed study to determine whether or not it would pay."

This author has a special interest in the foregoing suggestion stemming from a paragraph in his article "Ye Ancient Copper Mine of Arent Schuyler"[2]: "Near the entrance (i.e. of "The Devil's Ball Room") in a kind of alcove is a crystal clear pool of icy water replenished by the mine seepage, and flowing into a straight tunnel in part filled with water too deep for shoe tops. It has been found that this connects with one of the old drainage tunnels, finding exit far outside on the edge of the meadow as a spring whose waters are highly esteemed by neighborhood residents. (Footnote: Copper is exceedingly toxic to the algae frequently responsible for a disagreeable odor and taste in potable waters, in fact, the "biological test" is the most sensitive known for this metal.)"

In "The Schuyler Copper Mines, New Jersey", in *The Engineering and Mining Journal* for February 3, 1900, p. 135, a map of this famous mine depicts this drainage tunnel as proceeding from the Victoria Shaft, its mouth being the aforementioned spring at the base of the hill just south of the old electro-deposition house now used as an alloy factory.

In conversation with a chemist employed at this factory, he stated that he had been drinking the water from this spring for years and considered it of exceptionally fine quality. Curious to know if he had been unwittingly imbibing copper in so doing, the author obtained a sample of the spring water, concentrated one liter to a volume of a fraction of a cc., transferred same to the crater of a high purity graphite electrode, and dried and arced the same before the slit of a high dispersion spectrograph. As a blank, a liter of distilled water was similarly treated.

Now malachite, the green basic carbonate of copper, $Cu(OH)_2.CuCO_3$, is one of the most abundant secondary copper minerals to be found at the Schuyler Mine, and it was presumed that since this mineral is frequently found permeating the Triassic sandstone, it would be the most likely source of any copper present in the mine waters. However, "the solubility of malachite in water, indeed, the solubilities of all the basic cupric carbonates in this menstrum, is very small"[3] although it "increases with the concentration of carbonic acid", and probably does not exceed 35 parts of copper per million. Since copper is one of the heavy metals easiest to detect spectrographically, easily detectable in concentrations of 0.0001% (equivalent to 0.0001 mg. copper in 0.1 ml. of water), no trouble was anticipated in detecting any trace of this metal present. Examination of the plate, however, disclosed the surprising fact that *the sensitive lines of copper* 3247 *and* 3274, *were completely absent* in an arced sample representing all the copper originally present in a liter

1 *Rocks and Minerals* Vol. 16, No. 12, p. 455. December, 1941.

2 *Rocks and Minerals*, Vol. 12, No. 4, p. 99, April, 1937.

3 *A Comprehensive Treatise on Inorganic and Theoretical Chemistry*, J. W. Mellor, Vol. III, p. 272.

of the mine water as well as in a blank on distilled water. The concentration of copper, therefore, could safely be stated as being less than 0.0001 mg. per liter. The most probable explanation of the complete absence of copper from these mine waters within the limit stated, is that such slight amounts of malachite as are dissolved react by double decomposition with the silica of the sandstone to form the even more insoluble silicate of copper, chrysocolla which is also a common secondary copper mineral here.

Thus, the chances of recovering copper from the drainage waters of this particular mine seem but slightly rosier than that of getting gold from sea water!

With Our Dealers

Ward's Natural Science Est., Inc., 302 Goodman St., N., Rochester, N. Y., are moving their business to a new location in their city—just five miles from their present location. It will take several months to complete the operation. In the meantime they are holding a big removal sale. A 12-page catalog just released offers many items that have been greatly reduced in price during the sale which will expire on April 1st.

Catalog No. 421 (13 pages), received as we were going to press, announces the acquisition of a magnificent mineral collection. The catalog covers the specimens in the collection —one of the most outstanding that they have offered in years. It contains specimens of choice quality. The former owner of the collection has requested that his name be not published but he is well-known to many collectors.

V. D. Hill, Route 7-C, Salem, Oregon, and Wyoming Minerals, P. O. Box 266, Laramie, Wyoming, have increased their space in this issue. Look up their ads as they are both offering many new items.

Note that prices on the reflector and Estwing hammer in John Grenzig's ads are higher then formally. This increase in price is not due to Mr. Grenzig but to the manufacturers. The present war situation is forcing many manufacturers to increase the prices of their products.

John Albanese, P. O. Box 281, Newark, N. J., reports that he has greatly enlarged his extensive stock with the addition of good minerals from a wide range of localities. He has been specializing in Franklin, N. J., minerals.

Reports are coming in from members in various sections of the country commenting very enthusiastically on their Mineralights. To any collector who does not yet possess a good fluorescent lamp but who wishes to purchase one, we would suggest that he write to the Ultra-violet Products Co., Inc., 5205 Santa Monica Blvd., Los Angeles, Calif., and ask for their literature on the Mineralite (Dept. RP3). This is a lamp you will be proud to own.

One of our newer advertisers, G. U. Greene, 16704 Hillsboro Rd., Cleveland, Ohio, is featuring celestite in this issue. Have you this strontium sulphate in your collection? Better get one before his choice specimens are all gone!

Warner & Grieger, 405 Ninita Parkway, Pasadena, Calif., have departed from their usual practice in advertising minerals. In this issue they are featuring fossils and magnifiers. Every collector should have a good magnifier—we use a 12X size. If you are minus a magnifier, by all means get one quickly as the government might confiscate them in the near future.

Ernest Meier of New York City and B. Lowe of St. Louis, Mo., are still featuring zircons. As all good zircons come from Siam (Thailand) and this country is at war with us, she has sent us no gems for months and none may come for years. By all means get specimens of this beautiful gem which approaches the diamond in brilliance while they are still available.

Mark F. Foster, the opal miner of Virgin Valley, Nevada, but whose post office address is Denio, Oregon, has been uncovering some very fine fire opal lately. Opals are always popular, be they common or precious, while fire opal has an attraction all its own.

Wars may come and wars may go but nothing can stop the issuance of W. Scott Lewis' very interesting publication "Mineral Bulletin." The February, 1942, issue is just as interesting, and perhaps even more so, as any in the past. Every mineral collector in the country should subscribe for this paper.

CALIFORNIA MINERAL PRODUCTION FOR 1941

The total value of the mineral production of California for the year 1941, just closed, is conservatively estimated by the Statistical Section of the Division of Mines, Department of Natural Resources, under the direction of Walter W. Bradley, State Mineralogist, to have been $367,784,000. This is partly detailed in the tabulation below, but as there are more than 60 mineral substances on California's commercial list, figures on the most important items only are available at this early date. The production report forms are being mailed to the operators in all mineral lines, and the detailed and completed report will be compiled and published later.

The estimated total of $367,784,000 is an increase of approximately $24,958,000 over the 1940 total value. The principal substances showing increases in value over the previous year were petroleum, cement, tungsten, quicksilver, miscellaneous stone, natural gas, lead, brick, and the industrial minerals group. Important minerals to register a decreased value were gold, copper, silver, and the saline group.

Petroleum output showed an increase of about 9,000,000 barrels in amount and about 6 percent in value over that of the previous year. The estimated quantity of crude oil was 230,157,000 barrels for 1941. There was an increase in the price paid to producers by the refineries starting in March. Natural gas showed an increase in both amount and value of that utilized compared with 1940.

Reports of the mint and smelters show the output of gold to be less than in 1940. The state's yield of tungsten, quicksilver, lead, zinc, chromite, manganese showed marked increases during the year, while copper, gold, and silver showed decreases. The output of quicksilver, tungsten, and silver each exceeded the million dollar mark as well as gold.

Of the structural group, cement, miscellaneous stone, brick, and magnesite all showed increases in amount and value over that of 1940. The cement production was the largest in the history of this industry in California; and for the first time all the plants approached capacity output. Under the miscellaneous industrial mineral group, stimulated business conditions and national defense increased the demand for many substances included in this classification so as to make it show a marked increase in total value. The saline group was the only group to show a decreased value for 1941, this was not brought about by lack of demand for minerals included under this classification but by one of the largest operators of these materials being shut down for three months by labor trouble.

The estimated values and quantities for 1941 are as follows:

$ 49,420,000	(1,412,000 fine ounces) Gold.
1,527,000	(2,147,000 fine ounces) Silver.
913,000	(7,810,000 pounds) Copper.
370,090	(6,610,000 pounds(Lead.
4,233,000	(23,500 flasks) Quicksilver.
3,450,000	(150,000 units) Tungsten Ore.
425,000	Other metals, including chromite, manganese ore, iron ore, platinum metals, antimony, titanium, zinc, etc.
220,260,000	(230,157,000 barrels) Petroleum.
21,055,000	(363,025.000 M. cu. ft.) Natural Gas.
27,531,000	(19,950.000 barrels) Cement.
14,000,000	Crushed rock, sand, and gravel.
3,200,000	Brick and hollow building tile.
2,100,000	Other structural materials, including bituminous rock, granite, lime, magnesite, marble, sandstone, slate.
7,100 000	Miscellaneous industrial materials.
12,200,000	Salines, including borates, potash, iodine, salt, soda, and others.
$367,784,000	Total Value.

Collectors' Tales

PATH TO SPRING WORN NEARLY DEEP ENOUGH FOR PIPE LINE

Several years ago when prospecting for minerals in the Alleghany Mountains of West Virginia, we stopped one day at a farm house beside the road for lunch. During the time the farmer's wife and daughter were preparing something to eat, we sat on the front porch talking with the farmer who had placed himself in an easy chair with his feet high on the porch rail.

While he was relating some of his past experiences in an egotistical manner, his wife came through the front door with a water bucket and crossed the road and went up the hill to a spring. At that instant we interrupted the farmer in his intellectural elaborations by calling him a big fool and one of the most inconsiderate persons we had ever seen. I shall not forget his consternation. He dropped both feet to the porch floor with a bang and was struggling to rise from his chair when we told him to hold his temper a moment and we would point out a fact to him and he would then have to confess that he was indeed a numskull. At this point of the story we believe some of the readers will see what was in our minds when we spoke so rudely to the farmer.

We had occasion to return to that vicinity a few weeks later and stopped to see if he had carried out the plan of piping the water to his house by simply laying a water line from the spring. The farmer's wife was very much interested in showing us how convenient it was to get the water by just turning on the spigot. She had been carrying water from the spring for years.

Walter S. Amos

Collectors' Kinks

MALACHITE INK

We are indebted to John Vlismas, of 244 E. 77th St., New York City, for information on making malachite ink.

Have a small bottle about ¼ full of thin chips of malachite and then fill to top with a 28% ammonia (no doubt common ammonia will do). Let stand for 24 hours when the ink will be ready for use. The solution will have a deep blue color (like azurite) and it can be used with a pen like ordinary ink.

If water is spilled on writings or drawings in which this ink was used, the ink will not run so easily, sometimes not at all, (ordinary ink will run easily) but it will change color—the blue will turn green approaching that of malachite.

If a small drop of malachite ink is placed on paper, the solution on drying will crystallize out in tiny deep blue crystals.

Mr. Vlismas is a stone craftsman well known in lapidary circles and to collectors in the East. Through his hands pass the finest marbles, onyxes, agates, lapis lazulis, malachites and other minerals used commercially in the gem trade.

Clubs Affiliated With the Rocks and Minerals Association

ARIZONA

Mineralogical Society of Arizona
Geo. G. McKhann, Sec.. 909 E. Willetta Street, Phoenix.
Meets at the Arizona Museum in Phoenix on the 1st and 3rd Thursday of each month.

CALIFORNIA

East Bay Mineral Society
Miss Marjory Welch, Sec., 3268 Central Avenue, Alameda.
Meets on the 1st and 3rd Thursdays of each month (except July and August), at 8:00 p.m., in the Lincoln School Auditorium, 11th and Jackson Sts., Oakland.

Northern California Mineral Society
A. I.. Rogers, Sec., 137½ Joost Ave., San Francisco.
Meets on the 3rd Wednesday of the month at the Public Library in San Francisco.

Southwest Mineralogists
Mrs. Pearle Arnold, Cor. Sec., 2132 W. 76th St., Los Angeles.
Meets every Friday at 8:00 p.m. at Manchester Playground, 88th and Hoover Sts., Los Angeles.

COLORADO

Canon City Geology Club
F. C. Kessler, Sec., 1020 Macon Ave., Canon City.
Meets on the 1st and 2nd Saturdays of each month at 9:00 a.m. in the High School Building, Canon City.

Colorado Springs Mineralogical Society
Lynn M. Hopple, Sec.-Treas., Motor Route 2, Colorado Springs.
Meets usually at the Lennox House, Colorado College Campus, Colorado Springs, on the 2nd Monday, of each month at 7:30 p.m.

CONNECTICUT

Bridgeport Mineral Club
Mrs. Julia Walker, Sec., 55 Eaton Street, Bridgeport.
Meets in the Bridgeport Public Library on the 3rd Monday of the month.

Long Hill Mineral Club
Eugene F. Robinson, Sec., R. F. D. No. 4, Box 237, Bridgeport.
Meets on the 4th Tuesday of each month at 8:00 p.m., in the Hawley Memorial Library, Long Hill.

Mineralogical Club of Hartford
Mrs. L. T. Goodrich, Sec., 51 Jerome Avenue, Bloomfield.
Meets the 2nd Wednesdays of each month, at 8:00 p.m., at 249 High St., Hartford.

New Haven Mineral Club
Mrs. Lillian M. Otersen, Sec., 16 Grove Place, West Haven.
Meets on the 2nd Monday of the month at the Y. W. C. A. on Howe St., New Haven.

IDAHO—OREGON

Snake River Gem Club
Margaret L. Hearn, Sec., Payette, Idaho.
Meets alternately in Payette and Ontario, Oregon, (two small cities on the Snake River) on the 3rd Tuesday of every month.

ILLINOIS

Junior Mineral League
William Dacus, Sec., Morgan Park Junior College, 2153 W. 111th St., Chicago.

MAINE

Maine Mineralogical and Geological Society
Miss Jessie L. Beach, Sec., 6 Allen Avenue, Portland.
Meets last Friday of the month at 8 p.m., at the Northeastern Business College, 97 Danforth Street, Portland.

MARYLAND

Natural History Society of Maryland
2103 N. Bolton Street, Baltimore.
Office hours, Tuesdays and Fridays, 10:00 a.m. to 5:00 p.m.

MASSACHUSETTS

Boston Mineral Club
Mrs. Grace G. Dearborn, Sec., 40 Mt. Vernon St., Cambridge.
Meets on the 1st Tuesday of the month at 8:00 p.m., at the New England Museum of Natural History, 234 Berkeley St., Boston.

Connecticut Valley Mineral Club
Leo D. Otis, Sec., 12 Clark St., Westfield, Mass.
Meets on the 1st Tuesday of each month at 8 p. m. at various institutions in the Connecticut Valley.

MISSOURI

National Geologist Club
Mrs. D. P. Stockwell, Pres., Mt. Olympus. Kimmswick.

NEVADA

Reno Rocks and Minerals Study Club
Mrs. Rader L. Thompson, Sec., Box 349, R2, Reno.
Meets on the 1st Wednesday of each month, at 7:30 p.m., at the Mackay School of Mines, Reno.

Western Nevada Mineral Society
Miss Helen Griffing, Sec., 231 Mary St., Reno.
Meets on the 2nd Wednesday of each month at 7:30 p.m., at the State Bldg., Reno.

NEW JERSEY

Newark Mineralogical Society
William E. Simpson, Sec. 308 Grove Street, Montclair.
Meets on the 2nd Sunday of the month at 3 p.m. at Junior Hall, corner Orange and North 6th Streets. Newark.

New Jersey Mineralogical Society
O. B. J. Fraser, Sec.-Treas., 27 Stoneleigh Park, Westfield.
Meets on the 1st Tuesday of the month at 8 p.m. at the Plainfield Public Library.

NEW MEXICO

New Mexico Mineral Society
R. M. Burnet, Sec.-Treas., Carlsbad.

Society of Archaeology, History and Art
Carlsbad.

NEW YORK

Chislers, The
Miss Evelyn Waite, Sponsor, 242 Scarsdale Road, Crestwood, Tuckahoe.

Queens Mineral Society
Mrs. Edward J. Marcin, Sec., 46-30—190th Street, Flushing.
Meets on the 1st Thursday of the month at 8 p.m. at 8501 - 118th St., Richmond Hill.

OKLAHOMA

Oklahoma Society of Earth Sciences
W. P. Smiley, Sec.Treas., 229 W. Jefferson Street, Mangum.
Meets on the 2nd Tuesday of each month, at 7:30 p.m., at the Historical Museum, Mangum.

PENNSYLVANIA

Thomas Rock and Mineral Club
Mrs. W. Hersey Thomas, Pres., 145 East Gorgas Lane, Mt. Airy, Philadelphia.
Meets on the 3rd Friday of each month, at 8:00 p.m., at the home of its president, Mrs. Thomas.

VERMONT

Mineralogical Society of Springfield
Victor T. Johnson, Sec., 11 Elm Terrace, Springfield.
Meets on the 3rd Wednesday of each month at 8:00 p.m. at the homes of members.

WASHINGTON

Gem Collectors Club
Mrs. Lloyd L. Roberson, Sec., 522 North 70th Street, Seattle.
Meets on the 1st and 3rd Tuesday of each month (except during the summer) at 8:00 p.m., at the Y. M. C. A.

Washington Agate and Mineral Society
Monroe Burnett, Sec., 802 S. Central St., Olympia.
Meets on the 1st Monday of the month, at 7:30 p.m. at the home of some member.

Wisconsin Geological Society
Paul Ziemke, Sec., 2032 W. Keefe Ave., Milwaukee.
Meets on the 1st Monday of each month at 8:00 p.m., at the Public Museum in Milwaukee.

DE LUCA EMERY MINE HAS BRIGHT FUTURE

The largest deposits of emery in the western hemisphere are located near Peekskill, N. Y., as veins, often huge, in norite. Due to the extreme toughness of the ore and the fact that there is but little demand for domestic emery (the best grade comes from Turkey and Greece) the deposits are conducted on a small scale by crude hand methods.

One of the largest operators in the Peekskill district is Joe de Luca who operates the old McCoy mine, near Croton Avenue, two miles east of Peekskill. During the year 1941 this mine (now known as the de Luca Mine) produced 1205 tons.

The demand for Peekskill emery is increasing—and not due to the war—so that the future looks very promising from a mining standpoint. New uses have been found for the ore which is commonly used as an abrasive. During the first two months of 1942 the de Luca Mine tripled its output over the corresponding period for 1941.

To meet the greater demand for the ore with a systematic and efficient working of his mine, Mr. de Luca has enaged the services of an experienced mining engineer, a procedure never dreamed of in the past by any previous operator.

Club and Society Notes

New York Mineralogical Club

American Museum of Natural History, New York, N. Y., Wed., January 21, 1942. *Meeting called to order at* 8:15 *P.M. Attendance* 52.

The minutes of the preceeding meeting were read and approved.

Dr. Pough reported on the Saturday afternoon classes being given at the museum. Attendance is satisfactory and the balance of the course will be given as announced.

Mr. Trainer reminded the members of the dinners held at the Planetarium restaurant before meetings, urged that all outstanding dues be paid, and again mentioned the request by the School Nature League for mineral specimens to be used in city primary schools.

The following new members were elected:

Mr. Thomas Berry
Mrs. Virginia W. Berry
Mr. Dewitt Gutman

Mr. Trainer then introduced the speaker of the evening, Dr. Frank L. Hess, principal mineralogist of the U. S. Bureau of Mines, whose subject was "Rare Alkalis in New England."

The rare alkali metals lithium, caesium and rubidium are found in various pegmatite minerals occurring in Maine, New Hampshire, Connecticut and Massachusetts.

Lithium was discovered in petalite (5.76%) by Arfvedson in 1817 and was later found by him in spodumene and lepidolite.

Berzelius found it in red tourmaline but not in the black variety which isn't surprising as the two types of tourmaline occur in different parts of a pegmatite, the black having usually formed earlier than the red.

Rubidium was discovered spectroscopically by Kirkoff and Bunsen in 1858 and was isolated from 27 tons of spring water in 1860. Shortly afterwards it was found in lepidolite.

Caesium was also discovered spectroscopically by Kirkoff and Bunsen in the same spring water in 1860 and was later identified in pollucite.

The pegmatites in which rare alkali minerals occur are dike-like masses formed by the solidification of lighter solutions expelled from cooling granitoid rock. The primary stage is often fine grained and consists of quartz and microcline with black tourmaline. Such a mass often cracks on cooling and the cracks serve as channels for ascending steam and other gases. These later solutions deposit muscovite, colored tourmalines, lepidolite, spodumene, etc., in the previously formed cooling cracks (or in solution cavities formed by enlargement of such cracks). Thus the rare alkali minerals are found usually in the central portion of pegmatite bodies or in well defined inner zones. Certain pegmatites appear to have been connected with granitoid masses containing no rare alkalies and are therefore barren of these minerals.

Mineralogy

The non-pegmatite occurrence of these elements in New England seems to be limited to small amounts of lithium in cryophyllite mica from Rockport, Mass., and a phlogopite in limestone near Rutland, Vermont. The latter contains 1% rubidium.

The concentration of lithium is 10-20 times that of rubidium and 100 times that of caesium, though rubidium is more prevalent in traces.

Lithium

Occurs as an essential constituent of spodumene, lepidolite, amblygonite, triphylite, lithiophilite, and as traces in rubellite. Spodumene is the most promising source, there being small commercial deposits at Warren and Plumbago Mt. in Maine; Leominster, Mass.; and Goshen, Conn.

A significant deposit of lepidolite was found near Cobalt, Conn. Triphylite might be worked at Newry, Maine, and Grafton, N. H., and some 800 lbs. of amblygonite could be recovered at Newry, Maine.

It has been observed that lithium is absent from pegmatites containing biotite in the mass and that lithium minerals are seldom replaced by albite. Muscovite, however, does tend to replace them.

Caesium

Occurs as an essential constitutent of pollucite and is found in traces in some beryl and in lepidolite.

Pollucite was mined for its caesium content at Hebron and Buckfield, Maine, although the workings are no longer active. It alters to an ordinary kaolin.

Rubidium

No definite rubidium minerals are found in New England. The only known one is a borate called rhodizite. This element occurs in amounts up to 3% in some lepidolite of which commercial supplies are not available, and is also widespread in microclines. A commercial feldspar mined at Hebron, Maine, contains about 3.0% rubidium and is the largest known potential source.

The speaker was given a rising vote of thanks and the meeting was adjourned at 9:20 P.M. to permit the members to examine specimens furnished by Dr. Hess and a special exhibit by Mr. O. Ivan Lee. The latter included fine specimens of betafite, ampangabeite, polycrase, cupro-descloizite, a large mass of transparent vivianite, a very large chrysoberyl twin, and a ball of Chessy azurite.

M. Allen Northup, Sec'y.

Newark Mineralogical Society

The 206th meeting of the Society was held in the Brewster room, Junior Hall, 468 Orange St., Newark, N. J., on Sunday, February 1st, 1942. Seventeen members and one guest were present.

The program for the afternoon consisted of a symposium on micromounts with members exhibiting interesting specimens and explaining methods in mounting them.

Louis Reamer, Secretary

New Jersey Mineralogical Society

A regular meeting of the Society will be held on Tuesday, March 3, 1942, at 8:00 p.m., in the Plainfield Public Library, Plainfield, N. J. The guest speaker will be Dr. F. H. Pough, of the American Museum of Natural History, New York City, whose subject will be "Colored plates in old mineral books" (illustrated with colored slides).

On Sunday, March 15, 1942, a special meeting will be held at the Library at 2:30 p.m. The program will cover an identification session for Franklin, N. J., minerals. All who plan to attend are urged to bring their unknown Franklin minerals to the meeting.

A LIVING FOSSIL

There has recently been discovered near East London, on the southeastern coast of South Africa, a very remarkable fish. It is a living link with a past so remote as to be almost beyond the grasp of the ordinary mind and is regarded as the most important event in natural history in the 20th century. The fish, of a type believed to have become extinct in Mesozoic times, many millions of years ago, was taken by trawl net at a depth of 40 fathoms (about 240 feet) some miles west of East London off the mouth of the Chalumna River. It was 5 feet long, of a bright metallic blue color, and weighed 127 lbs. The fish has been named Latimeria chalumnae. The genus and the species are new to science. The genus, Latimeria, was named after Miss Courtney-Latimer, Curator of the East London Museum, and the species, chalumnae, was named after the Chalumna River.

This remarkable fish has been examined and described by J. L. B. Smith, of Rhodes University College, Grahamstown, South Africa, and his report published recently by the Smithsonian Institution, Washington, D. C., as Publication 3618.

Queens Mineral Society

The annual dinner of the Society was held at the Triangle Hofbrau in Richmond Hill, L. I., N. Y., on February 5, 1942. Thirty-one members and guests were present.

The guest speaker was Mr. Joseph D'Agostino, President of the New Jersey Mineralogical Society, who spoke on the benefits to be derived from mineralogy. He also made various suggestions on specialized collections of oddities, geodes, gems, zeolites, etc.

Mr. William Hanifin gave a short history of the organization of the Society. Messrs. John A. Grenzig, Peter Thein, Merton McKown, and Curt Segeler gave brief talks.

The election of officers was held at this dinner meeting. The following were elected to guide the Society during 1942:

President—Wm. Hanifin
Vice-President—Merton McKown
Secretary-Terasurer—Mrs. Edward J. Marcin

Mrs. E. J. Marcin, Secretary

BUREAU OF MINES SAFETY INSTRUCTORS SOUGHT THROUGH CIVIL SERVICE EXAMINATION

The Federal Civil Service Commission has announced that it is recruiting safety instructors for positions in the Bureau of Mines, Department of the Interior. The salary is $1,800 a year. Appointments will be made in the fields of coal and metal mining, quarrying, tunneling, and petroleum. All applications for the written general test must be on file with the U. S. Civil Service Commission, Washington, D. C. not later than March 30, 1942.

Two years' experience is required in a responsible position such as mine or section foreman, shift or fire boss, or safety inspector or engineer in the mining or petroleum industries. Before persons can be appointed from the employment lists established as a result of the examination, they must possess either a Bureau of Mines first-aid or mine-rescue certificate. Applicants must be between 25 and 35 years of age, and must meet certain rigid physical standards.

The duties of these positions include instructing classes in first-aid, accident prevention, and in the use of gas masks. Addressing safety meetings and assisting with first-aid contests may also be part of the work. Instructors are subject to call at any time to help with rescues and recovery work following disasters. They will also assist in investigating the causes of disasters.

Copies of the announcement and application forms may be obtained at first-and second-class post offices or from the Civil Service Commission in Washington, D. C. Qualified persons are urged to apply.

Bibliographical Notes

Halliwell Mine Map-Area, Province of Quebec: By G. S. MacKenzie

A report on the geology of the area surrounding the Halliwell gold mine in Beauchastel township. 27 pp., 3 figs., 1 pl., 1 map in pocket.

Eustis Mine Area, Province of Quebec: By G. Vibert Douglas.

A report on the geology of the area surrounding the Eustis copper-pyrite mine in Ascot township. 30 pp., 10 figs., 4 pls., 1 map in pocket.

Both reports are issued by the Bureau of Mines, Quebec, Que., Canada.

Geophysical Methods of Exploration and their Application to Geological Problems in New Jersey: By George P. Woollard.

An interesting report on this phase of geological exploration. 89 pp., 35 figs.

Issued by the Department of Conservation and Development, Trenton, N. J., as Bulletin No. 54.

The Gibeon Shower of Meteoric Irons in South-West Africa: By L. J. Spencer.

The presence of native iron in Great Namaqualand, S. W. Africa, was known since 1899 and many large specimens were secured, one weighing 299 lbs. is in the British Museum at London, England. A report on the occurrence covering 35 pages with 2 plates and 7 figures, appeared in the June, 1941, issue of the *Mineralogical Magazine,* Oxford University Press, London, England.

Coal Paleobotany: By Reinhardt Thiessen and George C. Sprunk.

The main object of this paper is to bring to the notice of paleobotanists the fact that coal contains an enormous amount of material in a remarkably good state of preservation. 56 pp., 44 figs.

Issued by the Bureau of Mines (Tech. Paper 631) and is for sale by the Government Printing Office, Washington, D. C. Price 15c.

The following publications have recently been published by the Smithsonian Institution, Washington, D. C.

A History of the Division of Vertebrate Paleontology in the United States National Museum: By Charles W. Gilmore.

The account describes the beginnings and growth of the National Museum's Division of Vertebrate Paleontology, beginning with the establishment of the Smithsonian Institution in 1846.

Issued as Publication 3109, pp. 305-377, 5 pls.

The Mammalian Faunas of the Paleocene of Central Utah, with notes on the Geology: By C. Lewis Gazin.

The paper covers further investigations of the area which added considerably to the collections of the region.

Issued as Pub. 3121, pp. 1-53, 29 figs., 3 pls.

The Nevada Early Ordovician (Pogonips) Sponge Fauna: By R. S. Bassler.

An interesting paper on a new fossil sponge that was discovered in the area in 1927.

Issued as Pub. 3126, pp. 91-102, 6 pls.

The Future of Man as an Inhabitant of the Earth: By Kirtley F. Mather.

There is good reason to expect that mankind will maintain existence and even live happily for an indefinitely long period of time.

Issued as Pub. 3613, pp. 215-230.

The Search of Oil: By G. M. Lees.

The paper is in three parts covering the nature of oil fields, exploration methods, and oil exploration in Asa.

Issued as Pub. 3614, pp. 231-248, 4 pl.

Perspectives in Evolution: By James Ritchie.

Issued as Pub. 3615,, pp. 249-270, 1 fig.

Faunal Content of the Maryville Formation: By Charles E. Resser.

The type locality for the Maryville formation is Rogersville, Tenn., where its outcrop consists of 150 to 550 feet of massive blue limestone.

Issued as Pub. 3676, 8 pp.

DEFENSE BONDS FOR BABIES BORN TO EMPLOYEES OF IRON COMPANY

George R. Hanks, President of the Taylor-Wharton Iron and Steel Company, which this year is celebrating its 200th anniversary, has notified the Company's 1,800 employees that a $25.00 Defense Bond will be presented to each baby born to an employee during 1942.

The Taylor-Wharton Iron and Steel Company, which has plants in Easton, Pennsylvania, and High Bridge, New Jersey, has been continuously in operation since 1742 when the original forge was built on the site of its present plant at High Bridge.

In his notice to employees, Mr. Hanks said that to qualify for the Defense Bond, one or both of the parents of the baby must have been employees of the Company in good standing on any date prior to July 1, 1942, and also at the date of birth between January 1, 1942 and December 31, 1942. The parent is instructed to send a birth certificate and the baby's name to the plant superintendent. The Company will then buy the bond and forward it to the parent.